North Dakota
Department of Transportation

EDMS
Electronic Document Management System

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EDMS - Post Project Review Report

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Project Overview

An Electronic Document Management System (EDMS) to enhance North Dakota Department of Transportation's (NDDOT) business processes and customer services by developing electronic workflows based on imaged and electronically stored documents kept in an electronic filing system. This imaging/workflow project will allow continued excellent service with existing staff resources. Naming conventions and retention schedules were also a part of the project's scope.

Project Objectives

1. Improve access to documents and reduce redundancy
2. Automate business processes
3. Rapid access and retrieval of information
4. Enhanced file control
5. Automatic document versioning
6. Security requirements
7. Improved customer service
8. Save valuable engineering resources / File access savings
9. Single Repository
10. Cross-indexing filing schemes
11. Future remote access to documents
12. Floor space savings
13. Implement the following technologies where applicable:
    a. Workflow – Pinnacle / FileNet BPM
    b. Imaging – Verity
    c. Document repository – FileNET
    d. Process & output images (fax, email, pdf) – Clearwater
    e. Rightfax
    f. LizardTech (file compression)
14. Implement new hardware where applicable:
    a. Scanners
    b. Monitors
15. Efficient disposal of records

Objectives Reviewed

Improve access to documents and reduce redundancy

Documents are stored in the FileNet system once and all users with the appropriate security level are able to view these documents concurrently if necessary. This reduces the need to make copies and eliminates the problem of being unable to find documents due to it being on another's desk.

Automate business processes

Scanning documents initiates workflow and allows for business processes to be automatically generated and moved to a work queue. We are also able to create objects based off of transactional processing instead of the old mainframe greenbar reports. This has eliminated an exponential amount of processing time for our users. Other instances processes are automated

by eliminating the need for user intervention. The documents are automatically stored in the system once processed. This eliminates the need for multiple handling of documents.

Multiple people in multiple business units, such as Design, Bridge, and the districts, can have access to the same document or related files simultaneously. And, documents do not need to be physically in one place to be processed as a unit.

Rapid access and retrieval of information

Instead of spending time searching for documents in expansive files across multiple formats and media, staff and management have information delivered to their desktops in seconds. This can be accomplished from central office as well as any of our districts.

Enhanced File Control/Automatic document versioning

Documents cannot be misfiled. They are not "lost" in the process somewhere. The FileNET application keeps a log of documents when they enter the system and who modifies them. The Pinnacle and BPM applications also track when a work object enters a work queue and who accesses and completes that work object. The system keeps track of each revision to a document and can either purge obsolete versions or track revision activity for audit trail.

Improved customer service

Users are now able to better serve their customers by answering their questions immediately. They no longer have to leave their desk/phone to get a file but can access it while they are speaking to them and respond quickly to requests and inquiries from both external and internal customers.

Save valuable engineering resources / file access savings

In the case of project-orientated processes like Preconstruction and Construction, a great deal of time can be saved by engineers and technicians when freed from manual document management tasks. The users no longer have to go to the physical file to store and/or retrieve documents. A lot of time can be saved in professional time spent retrieving and refilling documents. Often times in the past a file may have been checked out by someone requiring them to wait. With EDMS, they can store and retrieve documents from their desktop allowing them to share the same documents at the same time which decreases the time it takes for reviews and decisions can be made faster.

Security Requirements

Built-in functionality limits document access and records document-related actions, and allows for multiple versions to track the history of changes.

Single Repository

A central file that contains all the documents eliminates the cost and time associated with managing duplicate files in several operational areas across the NDDOT.

Cross-indexing filing schemes

Documents for a transaction, user or an entire project can be retrieved based on geographical, numerical, organizational or any other index key associated with the document. FileNet

indexing reference documents (taxonomies) have been created by each functional business area to ensure consistency in filing and retrieving documents. This is utilized across the department.

Future remote access to documents

Other authorized and enabled North Dakota State Agencies are currently accessing information through the enterprise EDMS system. In the future other agencies, entities, consultants, etc. could request and display NDDOT files via the enterprise system.

Floor space savings

As space is becoming more and more of an issue, we were able to better utilize many areas throughout the department. We have eliminated the central file completely on 4th floor. We are also freeing up space in division areas to allow for more functional area for their staff.

Implement the following technologies where applicable

1. Pinnacle Workflow – this is the enterprise application that allows the streamlining of business processes. It is integrated with both the FileNET system and the mainframe application. (This product is being replaced by FileNet Business Process Manager (BPM) – implementation date in the 05-07 biennium)
2. Verity Teleform and Verity Scan Station – we utilize both the Verity Teleform Scan Station and Verifier applications which allow for OCR and automated indexing of documents. This functionality allows many users to have the ability to verify and index documents from their desktops and not having to be located at the scan stations.
3. Verity Liquid Capture – this application allows the remote scanning for our districts. This allows users to utilize database lookups for the rapid and accurate indexing of documents. This will be replaced by Verity Web Capture due to the turnover from Cardiff to Verity. This functionality also allows many users to have the ability to verify and index documents from their desktops and not having to be located at the scan stations.
4. FileNET – by utilizing the state-wide document repository and eventually storing all documents for the department allows for better management and security. This allows for more sharing of information and reducing the duplication of documents.
5. Clearwater – this enterprise application allows users to create documents in packets and has the ability to certify the documents and distribute them as pdf. Previously a user had to purchase an Adobe license to have this ability. Now everyone in the department is able to benefit from this application.
6. Rightfax – this application allows for the sending and receiving of faxes electronically. This saves time in routing to the appropriate individual as well as the ease of adding electronic documents to FileNet. The use of this will decrease the cost of mailing documents; also long distance charges are eliminated by using this product. Several fax machines will be removed from the department eliminating costly port charges.
7. LizardTech Document Express – due to the large size of files from scanning in large color documents, the EDMS team implemented this technology. This compresses the file size to a very small percentage, which will reduce storage costs and speed the retrieval of the image to the user's desktop.
8.

Implement new hardware where applicable

1. Scanners – we implemented several scanners throughout the department. Their use ranges from large production scanning of backfile files to lower end scanning of just a few pages. We are also utilizing color scanning with this project.
2. Monitors – we replaced users' existing monitors with 21" monitors to allow for easier viewing of their applications and images simultaneously

Efficient disposal of records

Records disposal has been difficult in the past to know if the original record as well as the copies have all been disposed of. This is especially true since each of the 8 districts kept copies of records that were also in Central Office. With the automation of records disposal this will help reduce this concern. The Central Office now shares the same documents with the districts. Retention schedules have been reviewed and modified as we have worked with the various divisions.

Customer Response

Since EDMS has been implemented throughout the department, responses have been varied. We have seen the greatest positive responses in the areas where workflow automation as well as utilizing the document repository has been implemented. The users can immediately see efficiency improvements and are then more willing to work with the product.

Testimonial from Karen Baggenstoss, State Fleet

"I would say it's saved me about 2 hours per billing (which is every 2 weeks) and although it may not seem very significant, it's because the pinnacle process is able to catch many more errors and questionable transactions, resulting in more research/correction work for me). As you know, with the old process, I had to manually look through 140 pages of greenbar and 9,200 transactions for these exceptions which made it next to impossible to find alot of them. So, I probably have 4 times the amount of exceptions than I did before, because pinnacle finds them! But, I like the fact that pinnacle automatically brings up one exception transaction at a time, tells me exactly what the exception is, and I can correct it right there without having to go into the mainframe. Perhaps the benefit is not so much measurable in time savings, but that this new process is a much better and more efficient way of identifying problem transactions, which in the end, results in more accurate data going into the Fleet management system.

For the fuel bill, the pinnacle is working very well. I would not want to go back to the old method...."

The EDMS Core Group has been a major asset to the success of this project. Without their guidance and support we would not have been successful. The tasks that they played major roles in include: security groups, indexing values, communication, and decision making that affected the entire department.

Most of the Engineering divisions do not utilize workflow – they may in the future as we continue to review processes. Their biggest benefit at this time is the ease of distribution of documents. They can easily distribute an image, letter, memo, etc. to various divisions and

districts in just a few seconds. They are also able to file and retrieve documents from their desktops allowing multiple people to view the same image at the same time.

The users see the benefits of the system and are eager to continue the improvement process.

Lessons Learned

The project was divided into subprojects at the beginning of the biennium. This made the management of a project of this size more manageable. After implementation for each subproject a post-project review was completed so that the remaining subprojects could utilize the new ideas to improve the process. This proved to be very beneficial and some of the following items came out of these reviews that were later incorporated into subprojects:

1. Technical overview – "Kick off" Meeting
    a. Define Roles
    b. Deadlines
    c. Review technology that will be used in the project
2. Walkthroughs with detailed documentation
    a. The detailed documentation will be Graham Charts and Teleform design documents. When the developers were asked if they had all the information they required at the walk through they said no, but the business analyst would not be able to gather that information. The developer will conduct their own analysis if necessary.
3. Post Project Reviews
    a. In the past they weren't very timely. It was easy to put off because they weren't viewed as mission critical. We have discovered they are very valuable and need to be conducted within several weeks after the close of the subproject.
4. Point of contact with vendors.
    a. There was a problem with not having a single point of contact for vendors.
5. Meeting Minutes
    a. There was a problem with meetings being cancelled. It was decided to go ahead with meetings even though everyone might not always be there. It is thought that good meeting minutes will help the absentees catch up. Of course certain people are required for meetings and if they are absent, the meeting will need to be rescheduled.
6. Central point of contact ITD & DOT.
    a. There needs to be one clear person in charge of the project both at ITD and DOT.
7. Detail Design documents
    a. There needs to be detail design documents for each piece of work handed off for development.
8. Test plan.
    a. Devise a test plan. Too many things are discovered too late in testing. By devising a plan, perhaps some things will be thought of earlier.
9. Always use the production printer for forms testing.
10. Escalate the most effective process to management if users are not receptive.
11. Utilize new technology when redesigning processes. (New technology that has been tested and sanctioned by ITD)
12. Clearly state people's roles.
13. Make sure knowledgeable people are involved in the analysis phase (this was regarding interfaces).

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There were many impacts as we struggled to set realistic dates for tasks to be completed. These impacts were addressed and adjustments were made to the best of our abilities. When items were not being addressed the impact or issue was brought to DOT and ITD managements' attention.

The nature of the impacts has been;

- Things are more complex than first thought
- Users have not provided vital information and scope needs to be increased or changed to include the additional information.
- Sometimes information is not correct
- When things go wrong or are delayed, DOT and/or ITD resources are not available to work on them due to other priorities
- Sometimes the development team is waiting for information from a vendor or user Impacts cause the projects to "stack up". More and more, people have scheduled other work. Sometimes, the users enter into a busy time where they are unavailable to the development team.

One thing that was known from the very beginning of the project was that there were not enough resources between DOT and ITD to handle this project. Shortly after the beginning of the project we revised the project plan to have two tracts instead of one. This would allow essentially two groups to work on a subproject in theory getting two done at the same time to speed up the process. We hired a consultant from KnowledgeLake to come to ND to help with this effort for approximately six months. Although the work that was completed by this consultant was well liked by the end user, it took much longer than expected and did not allow other subprojects to get worked on. We then made a decision to let him go and work with our resources as ITD was in the process of training more staff.

Since the previous biennium there have been issues with IT Department understanding the complexity and size of this project and dedicating enough resources to handle it. Towards the end of this biennium they have addressed this issue by dedicating a team to the development of EDMS. There is also the fact that IT Department is working with other agencies besides DOT so allocation of existing resources poses a problem with deadlines. We have accomplished this through the use of the Work Management System by submitting service requests to IT Department to ensure the project is planned and resources are there.

The upfront process charts proved to be a key asset to the project.

Additional items that came from the final review include additional training needed for software such as Verity, a more clearly defined vision of forms is needed, future software changes will be evaluated with a more formal process, and work orders will be submitted prior to analysis being completed to allow ITD to plan their workload for the future.

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RISKS ENCOUNTERED

(as identified in our initial Project Plan)
Technology Changes – Risk Probability (Low-medium) – Risk Impact (Medium-High) – Corrective Action (Possible training of the project team members. Procure outside vendors. If necessary, issue an Impact of Project Change)

Midway through the 03-05 biennium, IT Department announced their upgrade plans from FileNet Content Services to FileNet P8. FileNet P8 is a web based application that can be easily and quickly deployed to end users. What was not realized at the time of this decision was that KnowledgeLake was to lose their partnership with FileNet and no longer support their integration. This caused the state to look elsewhere. Through the Enterprise Architecture process, FileNet BPM was selected to replace Pinnacle. NDDOT decided to take the risk on for the best interest of state government as this was the future direction for the enterprise.

The corrective actions as stated in our project plan were incorporated; however, the estimation of development time, training staff, etc. took much longer than anticipated. This impacted the overall project and we were not able to complete all subprojects as anticipated. Development and deployment will carry into the 05-07 biennium.

Project Synopsis

The study that was conducted in 1999 by SMSI stated "NDDOT is entering a complex technological environment when implementing a comprehensive enterprise-level Electronic Document Management / Workflow System." This indeed was true even several years later – this technology is ever growing and changing and the Department of Transportation is on the cutting edge.

The Electronic Document Management System for the department has been implemented. The main goal of the 03-05 biennium was to have the infrastructure in place to continue to build workflows into the future. This has been accomplished. FileNet is the document repository that was selected as an enterprise system. The department-wide tasks included security groups, indexing requirements, process reviews, scanning of files, and scanning implementation. There was a huge effort on the Computer/Network Support area to install and maintain all the new software and hardware. This wasn't for one small area but was implemented department-wide.

Along with this endeavor included forms redesign and a complete review of the existing records in each of the divisions and districts by the Records Management staff.

The EDMS project team reviewed over 200 processes during the course of the 03-05 biennium. Some of the processes reviewed were already quite efficient and we made very few changes; while other processes were changed significantly. There were changes made to incorporate the new technologies such as FileNet and Verity.

The following divisions still require process reviews to take place and workflow may be implemented as a result. Their infrastructure is in place to complete the workflow development (document class, indexing values, security groups, etc.)

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Financial Management – waiting on ConnectND implementation
Human Resources Division – waiting on ConnectND implementation
Maintenance and Engineering – was originally planned for 05-07
Civil Rights – was originally planned for 05-07
Planning and Programming – we did not have the time to complete this subproject as originally planned due to the upgrade to FileNet P8 and FileNet BPM
Contracts Process – waiting on ConnectND implementation

Due to the new technology, additional training would have been helpful for both DOT and ITD. There were too many times when it was a matter of learning as we go or finding out something while we were in production with a product.

Many issues were regarding the scanning software for color documents. This has not been done at a production level anywhere else in state government and posed a lot of challenges for us. There were also many people involved with it including (DOT staff, ITD Groupware, ITD Records Management, ITD Software Development, Binary Office, and Verity) This much interaction made troubleshooting problems very difficult. A new process is being developed for these types of issues but it is also an issue of ownership. ITD feels scanners are the agencies responsibility but DOT feels it is ITD's responsibility since ITD bills DOT a maintenance fee and it is an enterprise solution. The hardware is the DOT's responsibility. We think the best process would be for DOT to do the first line of troubleshooting and if it is felt the issue is software related, ITD help desk would be contacted. ITD would then contact the vendors if necessary (Binary Office and/or Verity). ITD and DOT would work together to resolve the issues. (As previously stated, additional training is also being looked into for this product for both ITD and DOT.)

The project team for this complex of a project was extremely extensive. There are so many different software packages, application integration, etc. that it takes many people. DOT and ITD worked very professionally on this project and the team concept was outstanding. When issues were addressed they were kept factual – opinions and assumptions were kept out of the picture. The team stepped up to the plate to try and meet deadlines by working overtime when asked to do so. The post project meeting demonstrated this aspect as compromises are a must to any good project. Also, project management was a key as ITD and DOT both had project managers to keep track of the project status. This proved to be very successful.